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EXAMINER	
CHEN, PO WEI	
ART UNIT	PAPER NUMBER
2697	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/998,919	MAILLOT ET AL.	
	Examiner	Art Unit	
	Po-Wei (Dennis) Chen	2697	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-36 is/are pending in the application.

4a) Of the above claim(s) 20-21 and 26-27 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19,22-25 and 28-36 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
4) ☒ Interview Summary (PTO-413) Paper No(s). 6 .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims 1-36 are pending in this application. Claims 1, 20, 22, 26, 28, 31, 33-36 are independent claims. This action is non-final

The present title of the invention is "Dynamically Adjusted Brush For Direct Paint Systems on Parameterized Multi-Dimensional Surfaces".

The Group Art Unit of the Examiner case is now 2697. Please use the proper Art Unit number to help us serve you better.

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-19, 22-25 and 28-36, drawn to painting objects in three dimensional or higher space, classified in class 345, subclass 582.

   II. Claims 20-21, drawn to process overscanning, classified in class 345, subclass 581.

   III. Claims 26-27, drawn to changing brush resolution, classified in class 345, subclass 605.

2. The inventions are distinct, each from the other because of the following reasons: Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as painting objects in three-dimensional or higher space. Invention II has separate utility such as processing overscanning. See MPEP § 806.05(d). Inventions I and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the

combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the subcombination (group III) specifies that the brush has specific properties of comparing current brush resolution of a current brush with a texture resolution. The subcombination has separate utility such as a brush that can be used for other applications that don't need the method of painting three-dimensional object of group I.

3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II or Group III, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Randall Beckers on July 17, 2003 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-19, 22-25 and 28-36. Affirmation of this election must be made by applicant in replying to this Office action. Claims 20-21 and 26-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-7, 9, 11-19, 22-24, 28 and 31-35 rejected under 35 U.S.C. 102(e) as being anticipated by Daniels et al. (US 6,268,865; refer to as Daniels herein).

7. Regarding claim 1, Daniels discloses a method for three-dimensional painting comprising:

Selecting an area of a displayed parametric object living in three dimensional or higher space; painting a brush directly onto a surface of the area (lines 31-37 of column 2). Also, the background disclosed by Daniels also suggested the method of painting directly onto the 3-D surface (lines 63-67 of column 1 and lines 1-2 of column 2).

8. Regarding claim 2, Daniels discloses a method for three-dimensional painting comprising:

The painting is performed view independently (lines 19-29 of column 12 and Fig. 9; the painting brush data is saved independently from the view information).

9. Regarding claim 3, Daniels discloses a method for three-dimensional painting comprising:

The painting first aligns the brush to a normal vector of the surface (lines 43-45 of column 15).

10. Regarding claim 4, Daniels discloses a method for three-dimensional painting comprising:

The painting is performed without first painting the brush on a two dimensional texture space corresponding to the object (lines 11-16 of column 10; the method disclosed by Daniels does not painting on texture, instead, the painting stroke is being mapped onto the 3-D object surface).

11. Regarding claim 5, Daniels discloses a method for three-dimensional painting comprising:

Converting a selected two dimensional screen coordinate into a three dimensional world coordinate (lines 30-35 of column 12 and 28-35 of column 13 and Fig. 9).

12. Regarding claim 6, Daniels discloses a method for three-dimensional painting comprising:

Identifying an intersection point by intersecting a vector comprising the three dimensional world coordinate and a viewing direction, and the object (lines 30-35 of column 12 and 28-35 of column 13 and Fig. 9).

13. Regarding claim 7, Daniels discloses a method for three-dimensional painting comprising:

Computing a tangent plane by computing a normal vector at the intersection point; and projecting the brush on the three dimensional surface of the selected area using the tangent plane (lines 41-59 of column 15 and Fig. 15-16).

14. Regarding claim 9, Daniels discloses a method for three-dimensional painting comprising:

Computing a tangent plane by computing a normal vector at an intersection point where the brush is applied; and projecting the brush on the surface of the selected area using the tangent plane (lines 41-59 of column 15 and Fig. 15-16).

15. Regarding claim 11, Daniels discloses a method for three-dimensional painting comprising:

The brush is two dimensional (element 16 of Fig. 1).

16. Regarding claim 12, Daniels discloses a method for three-dimensional painting comprising:

The brush is three dimensional (lines 36-37 of column 2).

17. Regarding claim 13, Daniels discloses a method for three-dimensional painting comprising:

The brush is cylindrical with a defined depth (lines 53-62 of column 2 and lines 16-19 of column 3).

18. Regarding claim 14, Daniels discloses a method for three-dimensional painting comprising:

An intensity of portions of a brush painting varies based on a normal vector of respective portions of the surface (lines 10-21 of column 17; the brush width corresponds to the intensity of a brush painting).

19. Regarding claim 15 and 16, Daniels discloses a method for three-dimensional painting comprising:

The painting stops beyond a portion of the surface with a normal vector which varies more than a predetermined angle from an intersection point normal and the predetermined angle is 90 degrees (lines 46-59 of column 15 and Fig. 15). It is noted that the painting corresponds to stroke width. And the width will be limited to a maximum size when normal vector is normal (or 90 degrees) to P, the view point intersection on the surface.

20. Regarding claim 17, Daniels discloses a method for three-dimensional painting comprising:

The painting stops beyond a portion of the surface when a distance from the brush to the portion of the surface is greater than a predetermined threshold (lines 33-43 of column 8 and Fig. 4). It is noted that the brush width corresponds to painting and it stops when the normal distance is greater than certain threshold depending on the size of brush chose.

21. Regarding claim 18, Daniels discloses a method for three-dimensional painting comprising:

Before the painting, the brush is rotated in a brush stroke direction (lines 34-41 of column 20).

22. Regarding claim 19, Daniels discloses a method for three-dimensional painting comprising:

Before the painting, a brush resolution for the brush is determined and applied (lines 5-9 of column 9).

23. Regarding claim 22, Daniels discloses a method for three-dimensional painting comprising:

A method of implementing an effect brush (lines 4-5 of abstract);

Selecting a selected area of a displayed parametric object living in three dimensional or higher space (lines 3-4 of abstract);

Reverse projecting texture from a surface of the selected area onto a temporary brush (see lines 19-29 of column 12 and Fig. 9; the saved stroke data corresponds to temporary brush which is mapped to the surface of the selected view that contains surface map information that corresponds to texture), processing the temporary brush using a selected process (lines 30-31 of

column 12), and projecting the temporary brush onto the surface of the selected area (lines 28-36 of column 13 and Fig. 9).

24. Regarding claim 23, Daniels discloses a method for three-dimensional painting comprising:

The selected process uses a particular filter (lines 21-24 of column 6).

25. Regarding claim 24, Daniels discloses a method for three-dimensional painting comprising:

The selected process uses a particular brush (lines 21-24 of column 6; different selected process corresponds to different brush).

26. Regarding claim 28, as statements presented above, with respect to claims 1 and 9 above are incorporated herein.

27. Regarding claim 29, Daniels discloses a method for three-dimensional painting comprising:

Determining a normal to the surface at the point (lines 43-45 of column 15 and Fig. 15);

Determining a radius and a depth of the brush in a plane tangent to the surface at the point (lines 46-59 of column 15 and lines 43-67 of column 20 and lines 1-12 of column 21 and Fig. 15). While claim recites radius, by determining the width of the brush, will also determines the radius of the brush. The depth is determined depending on the focus and amount of emphasis given to the point;

Bringing the brush and the surface into coincidence along the normal (lines 28-36 of column 13 and lines 46-59 of column 15 and Fig. 9 and 15). It is noted the brush width data is being determined and mapped on the surface normal point;

Determining portions of the object intersected by the brush using the depth and the radius (lines 46-59 of column 15 and lines 43-67 of column 20 and lines 1-12 of column 21 and Fig. 15). The width of the brush corresponds to the portion of the object intersected by the brush and depending on the focus and amount of emphasis, different width is computed;

Applying paint to corresponding portions of object texture in texture space (lines 19-29 of column 12 and lines 28-36 of column 13). The brush data is being mapped on to the object surface which contains surface map information that corresponds to texture;

While Daniels does not disclose applying the texture to the object in the invention, the method is disclosed in the background information (lines 55-62 of column 1).

28. Regarding claim 31, Daniels discloses a method for three-dimensional painting comprising:

Defining a series of points on the parameterized object representing a stroke (lines 29-35 of column 6 and Fig. 2);

Positioning and orienting a brush stamp for each point in the series of points in a view independent manner (lines 29-35 of column 6 and lines 19-29 of column 12 and Fig. 9; the brush point data is saved independently from the view information);

Painting the stroke into an object texture as a collection of texture modifications using the brush stamp for each point (lines 28-36 of column 13 and Fig. 9; the surface map information corresponds to texture information and is being modified by the brush stroke data).

29. Regarding claim 32, Daniels discloses a method for three-dimensional painting comprising:

A method as recited in claim 1, further comprising compiling images produced by the painting into a movie (lines 1-2 of abstract).

30. Regarding claim 33, as statements presented above, with respect to claims 1 and 32 are incorporated herein.

31. Regarding claim 34, as statements presented above, with respect to claim 1 are incorporated herein. Also see Fig. 29.

32. Regarding claim 35, as statements presented above, with respect to claim 1 are incorporated herein.

Claim Rejections - 35 USC § 103

33. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

34. Claims 8, 10 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daniels et al. (US 6,268,865; refer to as Daniels herein), as applied to claims 1 and 28 above, and further in view of Morioka et al. (US 6,239,809; refer to as Morioka herein).

35. Regarding claims 8, 10 and 30, Daniels discloses a method for three-dimensional painting comprising normal vector (element 253 of Fig. 15). It is noted that Daniels does not disclose interpolated normal vector. However, this is known in the art taught by Morioka. Morioka teaches a image processing comprising a interpolated normal vector (lines 28-31 of column 12). It would have been obvious to one of ordinary skill in the art at time of invention to utilize the teaching of Morioka to provide a more efficient image processing (lines 17-21 of column 2,

Morioka). Also, both Daniels and Morioka are directed to image processing in three-dimensional space.

36. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daniels et al. (US 6,268,865; refer to as Daniels herein), as applied to claim 22 above, and further in view of Bossut (US 6,239,807).

37. Regarding claim 25, it is noted that Daniels does not disclose the particular brush is selected based on a determination of an appropriate brush resolution. However, this is known in the art taught by Bossut. Bossut teaches a method for multi-resolution texture mapping that "offers the user the capability of touching up coarse details at one resolution, and fine details at a magnified resolution" (lines 49-60 of column 6). It would have been obvious to one of ordinary skill in the art at time of invention to utilize the teaching of Bossut to provide the advantage of allowing user to choose the appropriate resolution for painting the image.

38. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daniels et al. (US 6,268,865; refer to as Daniels herein) and further in view of Morioka et al. (US 6,239,809; refer to as Morioka herein).

39. Regarding claim 36, as statements presented above, with respect to claims 1-8, 14, 15 and 17 are incorporated herein.

Conclusion

40. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Geshwind (US 6,590,573).

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-8365. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Hofsass can be reached on (703) 305-4717. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6743 for regular communications and (703) 308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen
Examiner
Art Unit 2697

Po-Wei (Dennis) Chen
July 23, 2003